Comparing computer systems

By Emily Jones

For this activity I have to select two advertisements for computer systems and compare the difference in specifications.

Computer package 1 is an entry-level personal computer. Computer package 2 is from the Supagood Computer Company and is part of their extensive range of desktop personal computers. For each of the computers I will outline the system specifications and explain some of the terminology used in the advertisement, as well as outlining the strengths and weaknesses of each computer.

I have used computer package 1 to identify some of the basic system specifications of modern computers. In my discussion of this system I will attempt to explain how many of the components work. In my discussion of the second computer package, the Supagood computer, I will extend the specifications to include the desirable specifications for a multimedia system.

I have included a table which identifies the specifications of each machine and will use this table to highlight the strengths and weaknesses of each system.

Finally I have provided a recommendation of which computer system would suit a typical general user and which a user with specific needs.

Computer system 1

Price $1299

Computer system 1 is an entry-level, no-frills system that has been designed for users who require basic performance. The machine has been tailored to suit users who require a machine capable of general-purpose computing, accessing the Internet and running personal productivity tools such as the Microsoft® Office suite.

‘**Processor: Intel Celeron® 2.4 GHz**

Intel produces two main types of processor, the Celeron® and the Pentium®. The Celeron® is the slower of the two, slower not in clock speed (cycles per second) but in the way the arithmetic processes are executed. In the processor microchip, a section of the chip is used as a type of RAM (random access memory). The area or size of

this RAM section is smaller in the Celeron® processor than in the Pentium®. Thus the quantity of data/instructions that can be stored in this area is reduced in the Celeron®, making calculations slower than in the Pentium®, hence the Celeron® processor is cheaper to buy.

The slower speed would not be noticed by a user who performs standard computer tasks. However, the computer's capacity to run memory – and data – intensive programmes, particularly graphics and video software, may begin to show a lag time on command executions when compared to the Pentium chip.

Random access memory: 256MB

Computer 1 is shipped to the user with 256 megabytes of RAM (random access memory). This type of memory is commonly referred to as system RAM because it is housed in slots on the motherboard and is not contained in the processor.

RAM is the best-known form of computer memory and is considered 'random access' because it can be interrogated directly by the processor. Instructions can be written to, and removed from, the memory in a random order. There are different types of RAM available at present; these are SDRAM and DDRAM.

SDRAM, or synchronous dynamic RAM, is the older of the two current types available. The RAM works on the assumption that most of the data called on by the central processing unit will be required in a set sequence. SDRAM uses this assumption to advantage by calculating where the required data is stored in the chip and then moving quickly through the data structure to the targeted bit of data.

Based on the price, I will assume that computer 1 is sold with SDRAM as it is commonly cheaper than DDR Ram. If so, the speed at which the RAM can be interrogated for data would be 528 Mbps (megabits per second). I will discuss DDRAM when profiling computer system 2.

Hard drive: 40 GB

The hard drive is the main storage device for a computer. Computer 1 has 40 GB of storage space. This is standard for a entry-level computer and will allow the user to save and store pictures, music and other large file-size documents without fear of running out of space. The system is not shipped with any productivity software, such as Microsoft® Office, so the user will control the volume of software programmes on their drive, allowing them to decide the amount of space programmes occupy.

Some companies produce hard drives that contain firmware software. This is usually partitioned away from the user's section of the disk so it cannot be erased or corrupted. Unfortunately, this firmware occupies space on the hard drive and does not allow the

user access to this space, whether or not they want or need the firmware. This practice effectively reduces the size of the hard drive.

CD-RW drive: no specifications listed

This is a standard compact disc drive that has the ability to write or 'burn' compact discs. The advertisement does not state the speed of this drive.

56K V.90 fax/modem

This refers to the computer's modem. The modem is a device used by a computer to send digital data over an analogue phone line. The word 'modem' is a contraction of the words 'modulator-demodulator'. The modem in this computer package is capable of transmitting data at a rate of 56 kilobits per second, or 56 kbps.

This data rate is the standard rate for all computers built after 1998 and is more than adequate for the home user wishing to access the Internet, as most phone lines in Australia are not capable of delivering a higher bit rate.

10/100 network card

A network card allows the user to connect two or more computers together or connect a computer to an established network of computers. The 10/100 refers to the transfer speed or bit rate that the card is compatible with. Most large networks transfer data at 100 Mbps, while this card allows for switching to the slower 10 Mbps rate. This is a standard card added to most new computers by vendors. The manufacture of this card is not identified in the advertisement.

USB ports

Computer 1 has two universal serial bus ports in the rear of the case. A USB port allows the user to connect or attach nearly every type of computer peripheral easily and simply. Modern operating systems support USB ports; this means that the device being attached to the computer is recognised by the software and the drivers located and installed automatically. The installation of the device is often 'Plug-and-Play' - which means there is no requirement to reboot the computer before the device is operatable.

Computer system 2

Price $3599

The Supagood Computer Company produces a range of desktop computer systems designed for the home computing market.

Processor: Intel® Pentium® 4 2.5 GHz

The Pentium® chip is the 'flagship' processor for current personal computers. The Pentium® 4 has evolved over time and is the benchmark processor for most PC-compliant computers. The clock speed of more than 3.2 GHz is very fast and the chip has the advantage of a greater internal RAM allocation embedded in it. This allows faster execution of many commands inside the chip's architecture, making the actual process speeds superior to those of a Celeron® Processor.

Random access memory: 512 MB PC2100

At double the capacity of computer system 1, computer 2, has the most up-to-date RAM available. This type of RAM is DDR, or double data rate synchronous dynamic RAM. The PC2100 refers to the frequency or cycles per second at which the RAM modules can work; in this case PC2100 RAM operates at 266 MHz. There are some versions of this RAM module called PC2700 capable of higher speeds. This type and configuration of RAM allows a user greater ability to commit the computer to tasks that include:

- editing digital video and exporting
- high-resolution photographic files with software such as Adobe® Photoshop®.
- run high-resolution 3-D games and other animations with little lag time.

Hard drive: 200 GB

The large capacity of this hard drive suggests that the makers of computer 2 expect the user to create and store video and music files. This drive is three times the capacity of the drive offered by computer 1. However, the manufacturer and specifications of the drive are not listed in the advertisement. Standard hard drives have a rotation speed, or 'spin rate', of 5400 rpm (revolutions per minute) and have only recently been replaced by 7200 rpm hard drives with IDE connection. For video work it is recommended that the drive not be slower than 7200 rpm.

Computer 2 would most likely be equipped with the higher spin rate to match the system specification. This allows more fluid video capture from live FireWire feeds via a capture device.

Compact disc: DVD+R/RW/CD-RW combo drive.

The manufacturer has added more storage options to this machine by including a compact disc drive that includes a burner. Coupled with the hard drive, the storage capacity and flexibility of this computer leaves the buyer with few hardware additions to consider after purchase. The combination drive, as it is called, has the ability to read DVD media, CD-ROM media and CD-ROM re-written media.

A DVD is similar to a CD-ROM but has a much larger data capacity; about seven times that of a CD. This allows a full-length movie to be stored on a single disc using the MPEG2 codec. This will complement computer 2, as anyone wishing to capture video can do so by using the DVD drive. DVD can also store up to eight hours of music, just enough to fill up that huge hard drive. Beyond DVD, the user can also burn a CD and then re write that disc in this drive.

A writable drive is a must for any user who wishes to use their computer for graphics and multimedia, as CD/DVD is the cheapest and most flexible medium designed for home use.

Graphics or video card: 128 MB NVIDIA® GeForce®4 Mx440 3-D with TV out

This hardware is in the form of a card which can be installed into a vacant slot on the motherboard. The cards purpose is to improve and accelerate the existing on-board video controller. GeForce® is manufactured by NVIDIA® and this particular card has 128 MB of memory to process the video signal.

This card will deliver better signal colour and redraw ability to the monitor and will assist the production of a video signal on the monitor. The TV out refers to an S video–RCA adapter which allows the user to present a video signal from the card to a TV receiver. This is a feature that would appeal to video production users as it would enable them to establish safe zones for their video projects while compiling the projects for videotape.

The user would also be able to use this feature to produce two desktops; that is, have a monitor that contains the construction area of a programme on one screen and all the toolbars on a second screen.

Miscellaneous

- Computer 2 has two USB ports in the front of the computer tower to facilitate connecting and disconnecting peripherals.
- It has FireWire for the capture of digital video data, a 17” monitor and optical mouse.

- The inclusion of powered speakers will satisfy the multimedia user's desire for additional hardware.

Table of features

Component	Computer 1	Computer 2
Processor type	Intel Celeron®	Pentium® 4
Clock speed	1.7 GHz	2.53 GHz
RAM	256 MB	512 MB
Hard drive capacity	40 GB	120 GB
CD-ROM drive	CD-RW	DVD/R/RW/CD-RW
Graphics card	Standard onboard	GeForce® 4 card
Sound device	Standard onboard	Standard onboard
Modem	56K V90 internal	56K V90 internal
Network card	10/100 Mbps	10/100 Mbps
USB ports	2	2-6
FireWire ports	0	1-3
Monitor size	17 inch	17 inch
Price	$1299	$3599

Recommendation

The two systems I have analysed represent computers at both ends of the personal computer market. Both computers are shipped running Windows XP as the operating system. Computer 1 is a simple, entry-level machine for a user who wishes to perform common computing tasks. However, the user's knowledge and needs increase, they can easily install extra or higher-performance hardware. Computer system 1 is very affordable and has enough features to suit the demands of the general computer user.

Computer 2 is a system that has been specifically designed for multimedia. Accordingly, it is equipped with nearly all the hardware required to start creating multimedia products immediately. For a user who wishes to work with sound, graphics or video, this machine is capable of providing enough power and flexibility to meet any demands from the leading industry standard software.